DEPARTMENT OF THE INTERIOR
U.S. GEOLOGICAL SURVEY

Prepared in cooperation with the
MISSISSIPPI DEPARTMENT OF NATURAL RESOURCES
BUREAU OF LAND AND WATER RESOURCES

WATER-RESOURCES INVESTIGATIONS REPORT 85-4059

EXPLANATION

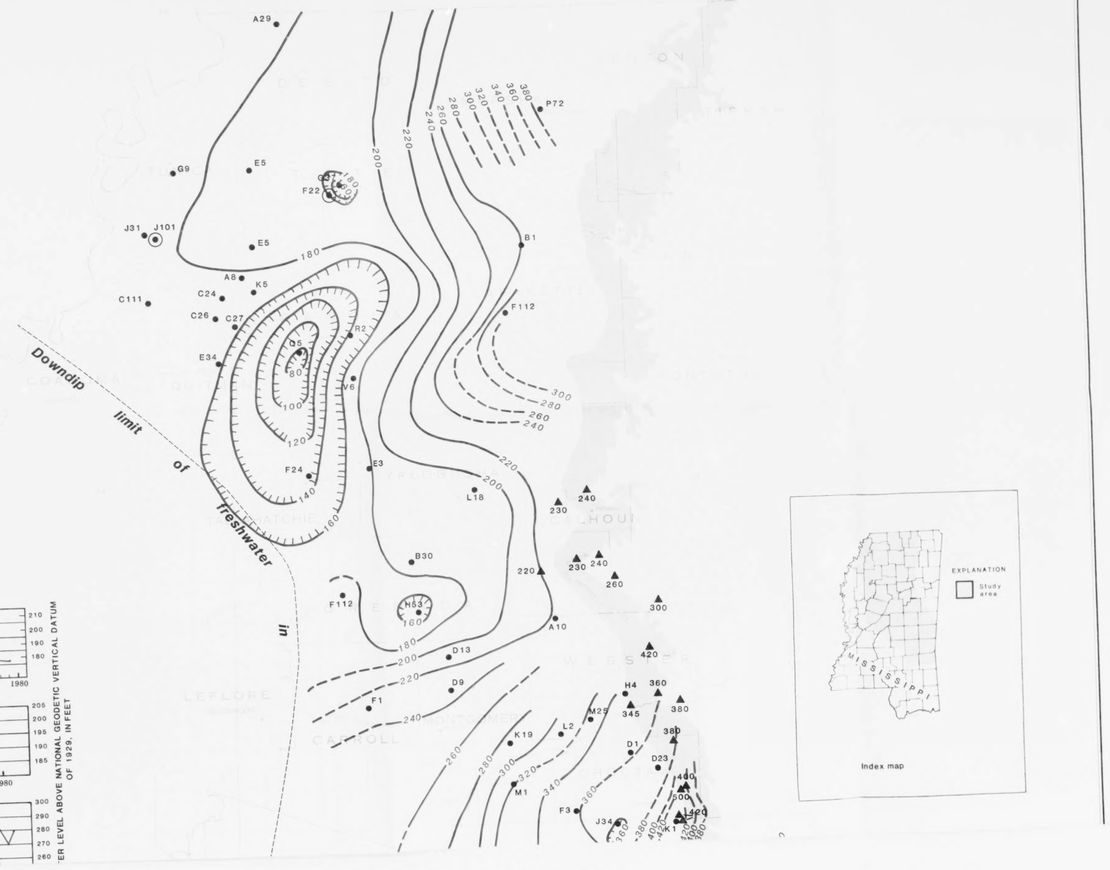
AREA OF OUTCROP OF LOWER WILCOX AQUIFER (Boswell, 1976)

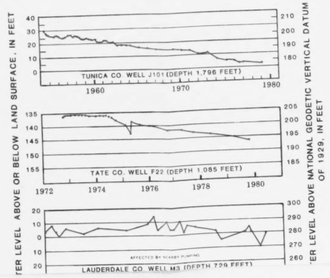
240 POTENTIOMETRIC CONTOUR-- Shows altitude at which water level would have stood in tightly cased wells. Dashed where approximately located. Contour interval 20 feet. Datum is National Geodetic Vertical Datum of 1929. Based on measurements of water-level altitudes in wells and on water-surface altitudes of streams in and near outcrop area

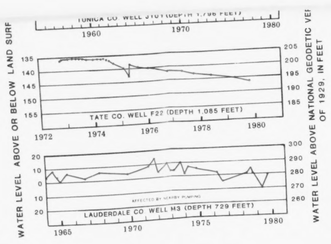
J8 OBSERVATION WELL AND NUMBER-- Wells are numbered alpha-numerically by county

M3 OBSERVATION WELL FOR WHICH HYDROGRAPH IS SHOWN

420 POINT AT WHICH ALTITUDE OF WATER SURFACE IN STREAM DURING FALL WAS USED TO DEFINE THE POTENTIOMETRIC SURFACE OF AQUIFER. Number is approximate altitude of water surface, in feet







HYDROGRAPHS OF WELLS IN THE LOWER WILCOX AQUIFER

(See map for locations. Note that vertical and horizontal scales vary. Straight lines connect data points. Data points represent periodic water-level measurement, generally made with steel tape.)

DISCUSSION

The U.S. Geological Survey, in cooperation with the Mississippi Department of Natural Resources, Bureau of Land and Water Resources, has prepared a series of maps of major aquifers in Mississippi to show the availability of ground water for municipal, agricultural, and industrial use and to show the effects of withdrawals on the aquifers. This map, the second in the series for the lower Wilcox aquifer, follows a map that delineated the potentiometric surface of the aquifer in 1979 (Wasson, 1980).

The lower Wilcox aquifer consists of irregular beds of sand and clay. The sand beds that form the aquifer range from less than 50 feet in thickness in the central part of the study area to about 400 feet in the southern and northern parts of the study area (Boswell, 1976). Recharge of the lower Wilcox aquifer is by precipitation on the outcrop area. As water moves down the dip from the outcrop mineralization increases. The aquifer contains freshwater (less than 1,000 milligrams per liter of dissolved solids) in a 26-county area, from Wayne to DeSoto County. The down-dip limit of freshwater is a boundary for this map.

The aquifer is the source of ground water for many large industrial and municipal wells in the study area. The regional westward ground-water movement has been modified by large centers of pumping in the Tunica area and in the Marks-Batesville-Charleston area. This potentiometric map is based on water-level measurements made in about 80 wells in the lower Wilcox aquifer in November and December 1982, as part of the southeastern Coastal Plain aquifer study, and on the altitudes of water surfaces in some streams. Since 1979, water levels have declined about 1 to 2 feet per year in areas that are not heavily pumped (see hydrographs). Water levels in or near the outcrop area show little or no change.

ADDITIONAL INFORMATION

The map, showing the results of the fall 1982 water-level measurements for the lower Wilcox aquifer, is the second map showing ground-water levels in the aquifer. These maps are part of a series that show water levels in the major aquifers in Mississippi. Data describing the individual wells used in this study may be obtained from the following:

Director
Mississippi Department of
Natural Resources
Bureau of Land and Water
Resources
P.O. Box 10631
Jackson, Mississippi 39209
(601) 961-5200

District Chief
U.S. Geological Survey
Water Resources Division
Suite 710, Federal Building
100 W. Capitol Street
Jackson, Mississippi 39269
(601) 965-4600

Copies of this report can be purchased from:

Open-File Services Section
Western Distribution Branch
U.S. Geological Survey
Box 25425, Federal Center
Denver, Colorado 80225
(303) 236-7476

SELECTED REFERENCES

Belt, W. E., and others, 1945, Geologic map of Mississippi: Mississippi Geological Society, Jackson, Mississippi.

Boswell, E. H., 1976, The lower Wilcox aquifer in Mississippi: U.S. Geological Survey Water-Resources Investigations Report 75-60, maps, 3 sheets.

Wasson, B. E., 1980, Potentiometric map of the lower Wilcox aquifer in Mississippi, Fall 1979: U.S. Geological Survey Water-Resources Investigations Open-File Report 80-597, map, 1 sheet.